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FORESIGHT IN INTERNATIONAL DEVELOPMENT

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A Foresight Scenario Method for Thinking About Complex Sustainable Development Interactions

Dominic Glover, Kevin Hernandez and Alun Rhydderch

Abstract In this article, we describe an innovative foresight approach, which we used to examine the interactions among three themes that are likely to be significant for international development policy and strategy in the coming decades. We adapted existing foresight scenario methods (drivers of change analysis, scenarios, wind-tunnelling) to investigate possible trade-offs, tensions and synergies that may exist among competing international development goals of *reducing inequalities, accelerating sustainability and building more inclusive and secure societies*. Our method combined foresight methods with programme theory analysis, an approach commonly used in impact evaluation. We describe our approach in detail and discuss its strengths and weaknesses.

Keywords: foresight, scenarios, sustainable development goals, SDGs, trilemma.

1 Introduction

Development studies and policy are necessarily concerned with the future – with trying to anticipate it and trying to influence it. The methods of foresight should therefore be intrinsically interesting to development scholars, policymakers and practitioners. Foresight methods have been applied to development policy questions and problems by national governments and international agencies, philanthropic foundations, intergovernmental organisations and international assessment exercises covering sectors such as energy, the environment and climate change (Bingley 2014; Heinzen 2004).

In this article we describe an innovative adaptation of a commonly used foresight approach, namely scenario building, which we used to examine the interactions among three important themes that may be expected to be significant for international development policy and practice in the coming decades. We wanted to explore possible trade-offs, tensions

and synergies that might exist among competing goals of human development. The multiple aims and simultaneous goals of development policy – expressed for example in the eight Millennium Development Goals (MDGs) of 2000–15, and the 17 Sustainable Development Goals (SDGs), replete with 169 individual targets, which succeeded them in 2016 – may seem like a utopian list of harmonious and mutually reinforcing wishes. What if, in reality, some of the many individual goals and targets are in tension with one another? Could there be inevitable or likely trade-offs between different desirable outcomes? Might progress towards one goal impede progress towards another? Policymakers and practitioners probably need to think about how their strategies need to be sequenced or balanced in order to achieve the best progress they can towards multiple desirable goals at the same time.

Scenario building is a commonly used foresight method that can enable a group of stakeholders and experts to identify major trends and drivers of change, risks, opportunities, threats, hopes and fears relating to a topic of interest (Wright, Cairns and Bradfield 2013). A typical approach to scenario building involves the construction of a two-dimensional matrix in which two intersecting axes, x and y , create four spaces in which contrasting scenarios may be developed. Important properties or parameters of each of the four scenario spaces are defined by the intersecting axes, and differences among the scenarios are determined by their contrasting positions in relation to the two axes. The axes might represent binary variables (yes/no, positive/negative, presence/absence) or continuous variables (ranges from high to low or maximum to minimum values, including positive and negative values).

Evidently, much depends on which features are chosen as axes to create the scenario matrix. A common procedure for identifying and selecting the axes begins with a brainstorming exercise to generate a longlist of major trends and 'drivers of change', which participants believe are already having or are likely to have a strong influence over the future. These trends and drivers may be grouped into categories such as *social*, *technological*, *economic*, *environmental*, *political* and sometimes *legal* and *ethical* (STEEP or STEEPLE). Participants are then asked to order these numerous factors against two indices: first according to their perceived relative importance as trends or drivers of change and second according to the degree of uncertainty participants experience with regard to the specific ways in which the trend or driver in question may unfold.

Through expressions of individual opinion and collective discussion, with an eye to the overarching topic of interest – global energy systems, conflict, or whatever it may be – two of the identified trends or drivers may emerge as particularly significant. In practice the facilitator of the exercise often plays a decisive role here, since she or he needs to select two major drivers that can be used to define the scenario matrix. To serve this purpose, the drivers or trends have to be expressed as axes, that is, a *scale* or *dimension* consisting of a binary (or categorical) variable or, occasionally and as appropriate, a continuous variable. For example, the important

and uncertain driver *demographic change* might be transformed to the axis *population growth* with the binary values *high/low* or indeed *positive/negative*.

Participants sometimes object at this stage, out of concern that the great majority of the drivers and trends painstakingly generated up to this point are about to be discarded, including many that have been judged to be very important and highly uncertain. This seems to undermine the participatory process that has carried the group to this stage. However, our experience is that most if not all of the drivers of change discussed in the first phase reappear within individual scenarios and certainly across the set of four scenarios, so in practice none of the creative work or discussion done before this step is wasted.

At this stage, workshop participants are typically divided into four small groups to work on one scenario each. The activity moves into a creative phase where the emphasis is on imaginative storytelling. The purpose of this narrative-building is not to predict the future – because the future is fundamentally unpredictable – but to make explicit and draw attention to all sorts of issues, factors, relationships and interactions that should be helpful to planners and policymakers when thinking about the kind of future they expect or fear, or the one they want to create.

The geometry of the two-dimensional matrix defines key parameters which ensure that the four scenarios will be different from each other in key respects that the scenario-builders have judged to be important, and that the set of four scenarios together will open up and test a broad range of possible outcomes that might plausibly emerge from initial conditions of high uncertainty. So long as the chosen axes are considered important and uncertain they can provide a structure in which insightful and thought-provoking scenarios can be developed. Which particular axes are selected for the exercise is to some degree arbitrary, since many other trends, drivers of change and other components will be incorporated as building blocks for the scenarios. In this way the scenarios do the real work, teasing out and bringing to light the diverse factors and dynamics which participants believe will be salient to the future of the topic under consideration. In this situation, the two-dimensional matrix with four scenario spaces serves its purpose well.

In our recent project, we were faced with the challenge of thinking about the interaction among three themes that had already been identified as important for the next few decades of international development policy and practice. Moreover, they were three themes on which substantial conceptual thinking had already been brought to bear on their past, present and future. Our work focused on the development goals of *reducing inequalities, accelerating sustainability and building more inclusive and secure societies*. This language happens to be taken from the five-year thematic priorities adopted in 2015 by the Institute of Development Studies (IDS 2015), but these three themes have much wider relevance as goals for sustainable and equitable global development. The ambition to create a more equal, sustainable, inclusive and secure world is central to the SDGs, for

example, as well as other development strategies, policies and programmes at national and international levels. Arguably, however, less attention has been given to how these strategic priorities relate to one another and interact. Are they essentially harmonious, as many development planners and campaigners might hope? Or can they sometimes be antagonistic? Our project was designed to explore these questions.

We felt that foresight methods could be useful in exploring the interaction between these three themes, but we needed a way to visualise and explore the intersection of three dimensions rather than two. Adding a third dimension to a classic scenario grid would produce a cube with no fewer than eight scenario spaces. To fill each of these with a unique scenario would require a significant investment of resources and produce a complex picture that would be hard to interpret and analyse. We needed a more practical tool.

We also faced the problem that our three dimensions (axes) were pre-determined by the goals of the project. This contrasts with what happens during a typical scenario exercise, as described above, which generally begins with a brainstorming exercise in which a diverse set of people, chosen for the relevance of their knowledge and experience, generates a longlist of drivers of change through an open-ended and participatory process. This activity is important not only for the list of drivers it generates, but also because it serves to engage and energise the participants, stimulating their thinking around the many trends and drivers of change they will need to draw on during the scenario-building phase of the process. We needed to introduce an alternative activity that could serve a similar function as the STEEPLE exercise, stimulating participants' thinking and bringing them up to speed with some background material, while allowing us as facilitators to keep the exercise focused on axes that had already been selected.

This article describes how we designed and implemented a set of participatory scenario-building exercises to meet these requirements. We convened three separate scenario workshops, each of which focused on one of the main themes of the project while also bearing in mind the interaction with the other two themes. The decision to hold three separate workshops rather than a single one was motivated partly by convenience and partly to ensure that each individual topic would receive close and independent examination. Participants in each workshop were recruited on the basis of their specialised knowledge of and interest in the topic in question. It was our job as convenors and facilitators to collect the discussions from each workshop and consider them as a set.

Each workshop had three main phases, as follows:

- 1 A modified drivers of change exercise in which we primed the discussion using diagrams to summarise the implicit programme theories we found in three source documents, each of which addressed one of the three pillars under consideration in the project.

- 2 A scenario-building exercise. The scenarios were given a triangular framework called the trilemma, which we adapted from a previous exercise by the energy company Royal Dutch Shell (2005). The trilemma allowed us to focus on the interaction among three different themes, while giving primary attention to one theme in each workshop.
- 3 A final phase loosely based on the foresight method of ‘wind-tunnelling’ (Rhydderch 2009). Wind-tunnelling can be used to evaluate the ‘fitness’ of a given strategy within the scenarios that have just been generated, but we emphasised its alternative use as a way of thinking about policies and strategies that might be used to steer towards a desired future.

In the following sections we describe in more detail how we designed and implemented each of these stages. Our description takes into account some of the lessons we learned along the way, and we have streamlined some details for the sake of clarity.

2 Priming the drivers of change discussion with programme theory analysis

Our first innovation was to use a participatory discussion around programme theory as a substitute for the brainstorming exercise that might otherwise be used to generate a longlist of trends and drivers of change. This was designed to prime the workshop participants with information about the topic of the workshop, engage them in discussion and stimulate their thinking.

Evaluators of project and programme impacts often develop some kind of programme theory to create a basis for their analysis. The core idea is that evaluators (as well as programme designers and managers) require an explicit theory about how the intervention under examination is supposed to produce its desired outcomes. The programme theory tells programme managers and evaluators what mechanisms and indicators to monitor in order to assess whether the intervention is working as expected. The procedure often involves the generation of a logical framework or outcome map that illustrates precisely how and why the inputs of a programme are expected to lead (through one or more intermediate steps) to the desired outcomes (Funnell and Rogers 2011).

We turned to programme theory with a special purpose in view. We interpreted our three international development goals as programmes of action and selected three documents to exemplify the thinking that informed the programme of action – i.e. the programme theory. As part of the work done within IDS to elaborate the Institute’s thematic priorities, three working papers were published in 2015, as follows:

- Justino, P. and Moore, M. (2015), *Inequality: Trends, Harms and New Agendas*, IDS Evidence Report 144, Brighton: IDS
- Luckham, R. (2015) *Whose Security? Building Inclusive and Secure Societies in an Unequal and Insecure World*, IDS Evidence Report 151, Brighton: IDS

- Schmitz, H. and Scoones, I. (2015) *Accelerating Sustainability: Why Political Economy Matters*, IDS Evidence Report 152, Brighton: IDS

We took these three documents as source materials for our programme theory analysis. We were taking liberties here, of course; the authors of the three documents were not in positions of executive power or authority in relation to the global goals of sustainable, equitable and inclusive development. They were not programme designers or managers in a strict sense. However, as experts in their respective fields, who were given a mandate to review the development challenges within the distinct arenas of *reducing inequalities, accelerating sustainability and building more inclusive and secure societies*, their analyses could be seen to share some relevant characteristics with programmes, including features such as problem diagnosis, analysis of mechanisms and relationships, priority-setting and strategy development.

We used the software package NVivo (v.11, QSR International Pty Ltd., 2015) to analyse the contents of each of the three documents. We used an open-ended coding system recursively to identify and refine the major themes, key concepts and relationships mentioned by the authors. We paid particular attention to any statements concerning mechanisms or causal relationships, as well as the key actors/agents or structural conditions identified by the authors as playing key roles.

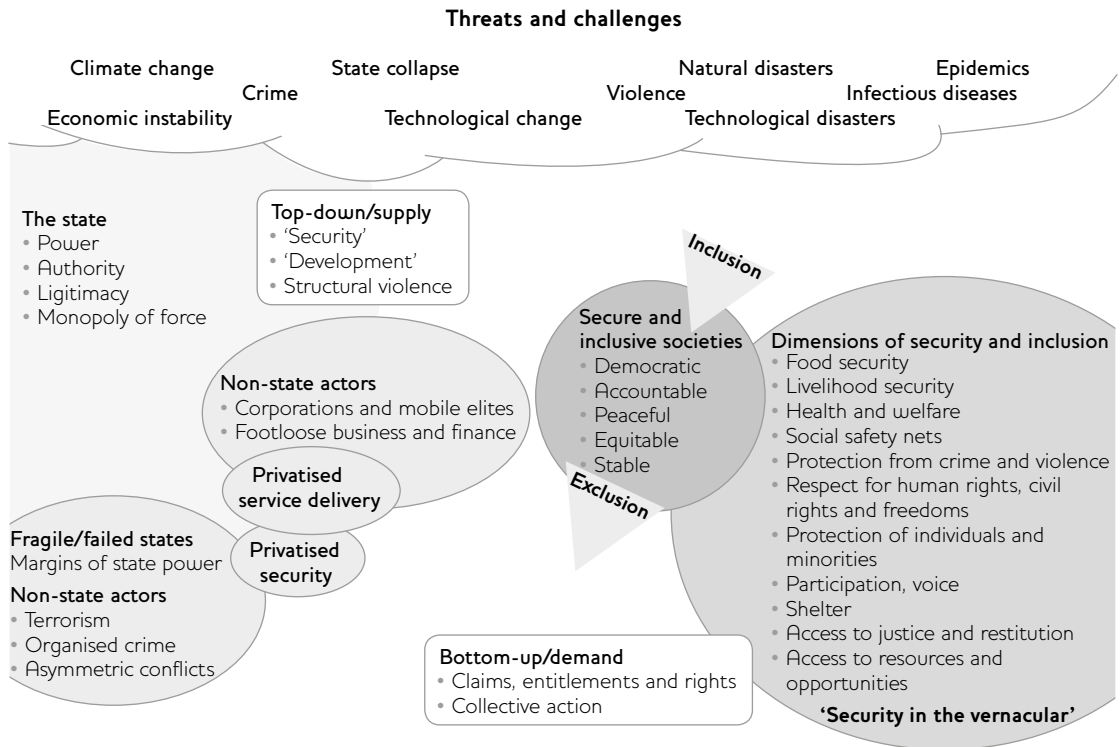
To supplement the documentary analysis, we also interviewed at least one author from each of the source documents using the foresight interview technique known as Seven Questions. In this method, a set of future-oriented questions, which may be adapted as necessary

Box 1 Seven Questions interview template

- 1 What would you identify as the critical issue for the future?
- 2 If things went well, being optimistic but realistic, talk about what you would see as a desirable outcome.
- 3 If things went wrong, what factors would you worry about?
- 4 Looking at internal systems, how might these need to be changed to help bring about the desired outcome?
- 5 Looking back, what would you identify as the significant events which have produced the current situation?
- 6 Looking forward, what would you see as priority actions which should be carried out soon, if you were responsible?
- 7 If all constraints were removed and you could direct what is done, what more would you wish to include?

Source: HM Government (2014: 17).

Figure 1 Programme theory diagram



Source Luckham (2015).

to fit the topic in focus, are used as a rapid and effective way to encourage knowledgeable individuals to articulate thoughts, beliefs and expectations about the future, which they may not yet have expressed (HM Government 2014: 17) (Box 1).

We used the insights from our analysis of the source documents and interviews to generate diagrams that would represent the contents of the documents as clearly and faithfully as possible. Our first attempt was to develop outcome chains for each document; however, this effort produced extremely complex diagrams that were very hard to interpret. In our second attempt we distilled the central messages of each document into a simplified visual representation.

Another team of researchers, or indeed the authors of the documents themselves, might well have come up with different summaries of the three documents, but our purpose was not to offer a perfectly objective and complete summary of the contents of each paper. The diagrams were designed to offer participants an accessible summary of the documents' main arguments and key insights, so that they would stimulate reactions, critiques and discussion. In this way, they took the place of the brainstorming exercise that might otherwise be used at the beginning of a scenario workshop to generate a list of trends and drivers of change. An example is shown in Figure 1.

Figure 2 Workshop interaction with the programme theory diagrams



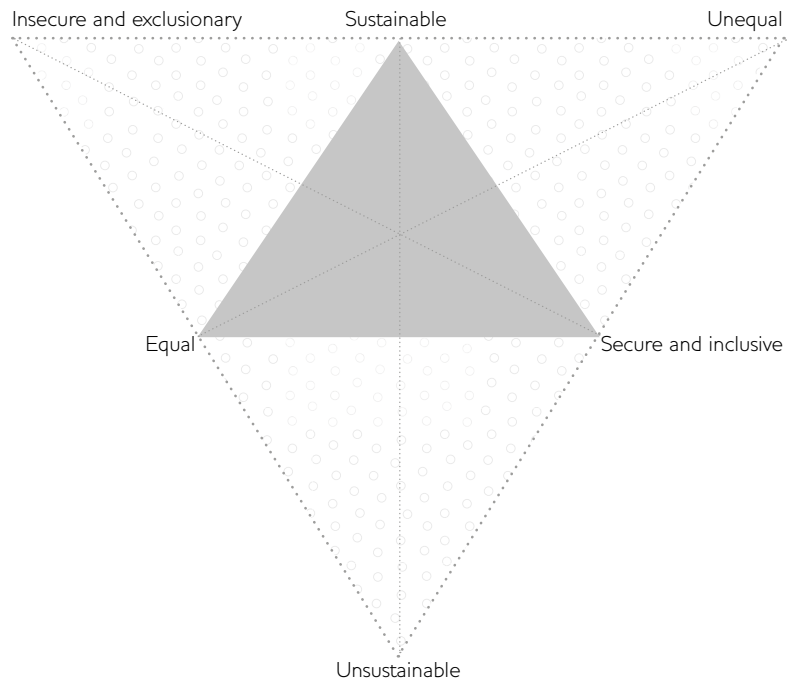
Photo credit Kevin Hernandez.

We printed copies of the three diagrams in full colour, including some small poster-sized versions, for use in our workshops. We also displayed the diagrams to the participants as slides prepared in Microsoft PowerPoint, and presented the images orally in detail, explaining them and drawing attention to their key features. This led directly into an open discussion. After a few minutes, participants were invited to reflect individually on their reactions to the diagrams and to add their comments and annotations to the poster versions, using sticky notes (Figure 2). Finally we gathered around the poster versions of the diagrams, which had been heavily annotated with sticky notes, so that individuals could point out and explain their own contributions.

This stepwise process led the participants to engage in detail with the diagrams and there was considerable discussion and sharing of views. The process ensured that we maintained a strong participatory element centrally within the process despite not beginning with an open-ended brainstorming session to generate drivers of change. The discussion and critique of the diagrams brought out many factors and dynamics that later resurfaced within the scenarios that the participants created. The process of deconstructing and critiquing the programme theory diagrams was successful in stimulating thoughtful reflection among the participants and motivating them to improve on the materials we had prepared.

3 Framing the scenarios using the trilemma triangle

Our second move was to use a triangular framework in which scenarios could be created, rather than the typical square matrix. This allowed us to explore the interaction among three major factors or axes, rather than the conventional two, and to do so without entailing a need for as many as eight different scenarios to be elaborated. We based this framework on the 'trilemma triangle,' a concept used previously by

Figure 3 Key features of the trilemma framework

Source Authors' own.

Shell, the Anglo-Dutch energy company (Royal Dutch Shell 2005). In Shell's own foresight study, the trilemma triangle posited a situation in which there were three competing principles or forces: market incentives, regulation and community values. These forces were assumed to be striving towards different objectives – efficiency in the case of the market, security in the case of regulation, and social justice and cohesion in the case of community.

Interestingly, Shell's approach assumed that there were necessary trade-offs among the three principles; society could only maximise two of them at the expense of the third. We did not want to make a prior assumption that such a trade-off must exist among the three development goals of *reducing inequalities, accelerating sustainability and building more inclusive and secure societies*, yet we wanted a structure that would draw out tensions, conflicts and trade-offs between these goals, if they existed. Indeed, a key part of our purpose was to test the complacent assumption that sustainable development strategies must be mutually compatible and harmonious. The Shell experience with the trilemma indicated that the triangular geometry could serve us quite well, although we had to be careful not to preclude the possibility that, after all, the three goals might be mutually supporting or synergetic.

Figure 3 illustrates the trilemma framework we used and highlights some of its key characteristics. The shaded triangle illustrates the basic interaction among the goals of equality, sustainability, and security/

inclusion. Each corner of the triangle is in a direct relationship with the other two corners. A given situation or scenario might be interpreted as being situated somewhere within the shaded zone but, as emphasised by Shell in their treatment of the trilemma triangle, potentially closer to one or two of the poles than the other(s).

As with the conventional scenario exercise, described at the beginning of this article, it is helpful to transform the singular poles of equality, sustainability and security/inclusion into axes extending, respectively, from equal to unequal, sustainable to unsustainable and secure/inclusive to insecure/exclusionary. These axes are depicted in the diagram by the dotted lines that extend from each corner of the shaded triangle and bisect its opposite side. The points where these axes cross the sides of the shaded triangle resemble the intersection point between the two axes in a conventional two-dimensional matrix, except that, in this case, the axis (e.g. equal–unequal) is shown interacting with two other, qualitatively different principles (e.g. sustainable and secure/inclusive) rather than a single axis that has a positive and negative pole.

The extension of the three axes beyond the edge of the shaded triangle allowed us to depict the shaded triangle's opposite case in which the negative poles – *unequal*, *unsustainable* and *insecure/exclusionary* – define a larger, dystopian triangle, shown with a dotted background, where all the dimensions are negative.

A useful feature of our trilemma framework is that it allows us to think systematically about interactions between positive and negative themes. For example, each side of the larger triangle connects two negative poles (e.g. insecure/exclusionary and unsustainable) with one positive pole (e.g. equal). Alternatively, each corner of the large triangle represents a negative pole (e.g. unequal) in a relationship with two positive poles, located at corners of the shaded triangle (e.g. sustainable and secure/inclusive). (Another way of expressing this is to interpret the three small dotted triangles, outside the shaded zone, as spaces where one of the poles is negative while the other two are positive.) This feature of the diagram was beneficial for our scenario deliberations because it forced participants to contemplate potential negative interactions (such as tensions and trade-offs) as well as positive interactions (as defined by the shaded triangle). We will return to this point in a moment.

Helpfully, the diagram in Figure 3 can be read in several different ways. This multiplicity of readings can be illustrated by focusing on the points within the diagram where lines intersect. As discussed above, for example, the axes of equal–unequal, sustainable–unsustainable and secure/inclusive–insecure/exclusionary each cross the sides of the shaded triangle. This property can be used to show how a range of positive or negative outcomes on one scale (e.g. un/equal) might exist, in principle, with a positive outcome in two others (e.g. sustainable and secure/inclusive).

The very centre of the diagram depicts the intersection between all three of the axes in which we are interested. This successfully illustrates the idea that a given situation or scenario might have any of a range of positive and negative values on each of the three axes, so that in principle it might be plotted in a specific location in three-dimensional space.

However, the diagram could be read as implying that a perfect balance among the three goals would be found at the centre point of the diagram yet this is also, logically, the point where all three axes are at their zero value. In other words, the geometry of the diagram implies that it is impossible to optimise the three competing goals at any value above zero. This is the drawback we touched on above, namely the structural implication that there must be a trade-off among the three desired goals. To play down this feature, we began to refer to the entire shaded triangle as the favourable zone within which development actors should strive to achieve a positive balance among the three development goals.

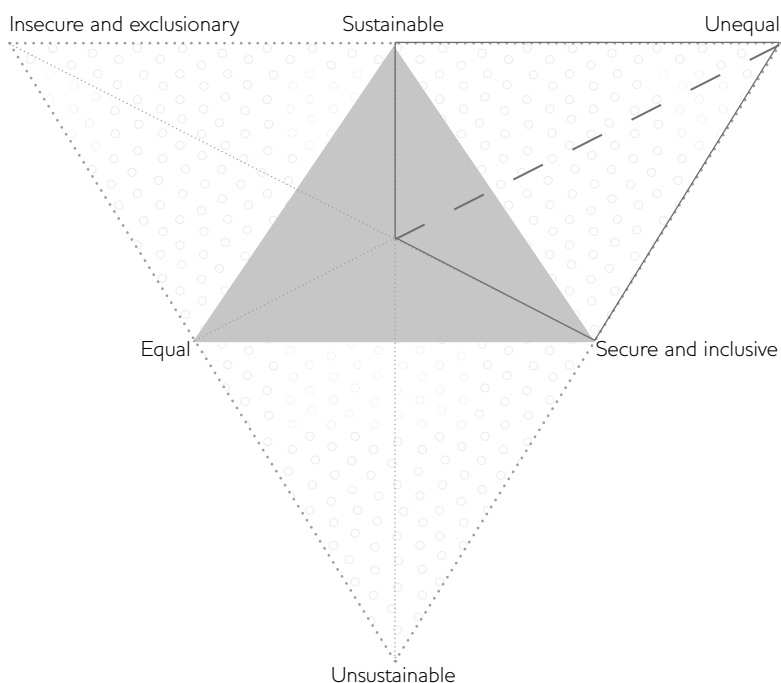
If the three sides of the shaded triangle were imagined as folds in an origami model, the shaded zone would form one plane of a tetrahedron (three-sided pyramid) and the goal for development policy or strategy would be to steer towards a position somewhere on that plane. This model would imply that the three (negative) points of the large dotted triangle in Figure 3 would come together to form a single corner or apex of the tetrahedron, thus seeming to unite inequality, unsustainability and insecurity/exclusivity in one place.

It is immediately obvious that by reversing the polarity of the axes within the trilemma we could have used the tetrahedron to illustrate the bringing together of the positive goals of development instead – equality, sustainability and security/inclusion. Had we done this, any sub-optimal alignment of the three goals would have produced a scenario that could be located geometrically at a point somewhere within the three-dimensional space of the tetrahedron. As well as being situated at some to-be-determined distance away from the triple-positive apex, such a scenario would also be displaced laterally from the central axis of the tetrahedron, as determined by its relationship to each of the three negative apexes at the corners of the opposite plane (i.e. the plane we have referred to as the ‘shaded zone’ above, but now with negative instead of positive characteristics).

This visualisation might have been helpful to some of our workshop participants, although depicting and discussing three-dimensional space is generally quite difficult. With sophisticated video graphics we might have achieved it, albeit at some expense. A potential drawback of visually modelling the union of three desirable development goals in a single apex of a tetrahedron is that it could have undermined the emphasis we wanted to bring to the potential for trade-offs and tensions to exist among the three competing goals.

We used the trilemma framework in the following way. After the discussion of the programme theory diagrams and drivers of change,

Figure 4 Scenario spaces (example for the (in)equality scenario exercise)



Source Authors' own.

we introduced the trilemma framework and discussed its basic features and characteristics, as outlined above. We then set up the scenario-building exercise. For this part of the process, we wanted participants to focus at first on possible negative scenarios for the goal in which they were particularly interested. For example, we wanted participants in the 'reducing inequality' workshop to explore scenarios of high inequality. Correspondingly, we wanted the participants to address the possibility of scenarios in which negative outcomes for the goal in which they were most interested could be associated with positive outcomes for the other two goals (e.g. sustainable and secure/inclusive). We asked the participants to undergo this discomfiting mental exercise in order to ensure that our process would achieve the objective of teasing out possible negative associations or relationships that might be envisaged.

We illustrated this approach using Figure 4. The bold dark grey lines in this diagram delineate a kite-shaped scenario space, which is divided by the dashed line into two triangles. Both the kite and the triangles contain an area that falls within the shaded zone, but at first we asked participants to concentrate on the dotted portion, where negative interactions would come to the fore.

To ensure that the interaction with each of the secondary themes of the workshop received proper consideration, we divided our workshop participants into two small groups and each group focused on one of the triangles. Each small group generated the outlines of a scenario that was

dystopian to some degree. Some participants found this quite challenging and uncomfortable, although the exercise also created moments of black humour that were helpful to the creative and imaginative atmosphere we wanted to sustain. The exercise also forced participants to confront some unpalatable possibilities in which development progress in some areas might not be accompanied by success in other areas and might even come at their expense. (For example, a world that achieves substantial equality in material wealth might also have levels of consumption that are incompatible with ecological sustainability; or a world that achieves high levels of economic security and inclusion might be highly unequal in the distribution of wealth.)

The two small groups presented their dystopian scenarios to each other, and these were discussed for a short time before we moved to the final phase. In the final phase the two groups came together again and the whole group elaborated a third, unified scenario that integrated the interactions between the axis of principal concern and both of the other axes – in other words, a single scenario occupying the space of the entire kite in Figure 4.

At this stage, our process blended the construction of a vivid and plausible scenario with a discussion of strategies, processes and policies that might help to steer away from dystopian or unsatisfactory scenarios towards the shaded zone. The shaded zone represented the future that development policymakers, practitioners and researchers should strive for: one that is secure and inclusive, sustainable, and more equal than today.

We based this part of the workshop on the foresight method known as ‘wind-tunnelling’, which often concludes a scenario-building exercise. Wind-tunnelling may be used to assess the likely usefulness or effectiveness of policies or strategies that might be adopted within the future scenarios that have just been created. Put another way, wind-tunnelling can be used to think about ways to steer society towards desirable scenarios and away from undesirable ones (Rhydderch 2009). Thus, simultaneously with the construction of the unified kite scenario the participants considered what it would take to navigate successfully to the shaded zone. As a result, rather than painting a snapshot of a future world, the scenarios emphasised steps, processes and developments that could plausibly lead from today’s world to a desired future world that will be more equitable, sustainable, secure and inclusive. Our scenarios were set 30 years into the future, around the year 2046.

One of our three workshops deviated from the process described above because, due to inconvenient scheduling and illness, we had fewer people in the room on the day than we had intended. To handle this situation, instead of dividing the participants into two groups to consider the two triangular scenario zones (depicted in Figure 2) separately, we worked with a single group. Still focusing on the outer, dotted portion of the kite at first, participants were asked to build a scenario for a future that would be insecure/exclusionary yet also sustainable and equal. This proved quite challenging but, nonetheless,

the workshop moved very smoothly and the participants successfully built a scenario that brought to the surface the interactions we wanted them to explore.

4 Discussion

The substantive outcomes of our scenario workshops will be reported in a forthcoming project report. From a methodological point of view, the workshops were very successful in generating a set of vivid and thought-provoking scenarios, but their chief value emerged from the richness of the discussions and debates that took place during three lively and stimulating days. Our process was praised by several participants, who found the experience enjoyable and useful to their own work.

We demanded a lot from our workshop participants. We depended heavily on their willingness to go along with a scenario-building process in which several parameters were fixed in advance, and which required them to perform some challenging mental gymnastics. Our experience was that the participants accepted these constraints and were willing to trust the process we had designed, even when aspects of the exercise seemed contrived or uncomfortable. We believe that part of our success stemmed from our ability to demonstrate that we had prepared carefully and in depth, and we took the time to explain our process in detail, allow time for discussion, and seek consent to move forward with each step. The programme theory diagrams we prepared served not only to inform the participants and prime the discussion, but also to show that we had made careful preparations before the workshop began. Several participants said that they found the diagrams informative and stimulating, and they appreciated the effort invested in creating and explaining the images.

In this regard we were helped by the richness of the source documents and their suitability, as we expected, as a basis for programme theory analysis. It was also helpful that our workshop participants were drawn from among development scholars within IDS and the University of Sussex, most of whom knew one another at least a little even if they came from different schools or units. They shared an institutional as well as a professional interest in exploring the development policy themes discussed during the workshops, which was a source of goodwill towards the process we designed.

Our two key innovations were to use programme theory analysis to prime the drivers of change exercise in each scenario workshop, and to use the trilemma framework as a means of focusing the scenarios. The programme theory analysis worked by feeding existing information into the process in a way that ensured participants focused on the three themes under consideration, while stimulating debate and still allowing plenty of scope for participants to bring their own insights and concerns into the discussion. The trilemma triangle successfully framed the scenarios as spaces in which to explore the interaction among the three themes and avoided multiplying the number of scenarios to an unhelpful degree.

The trilemma triangle was particularly successful in forcing participants to confront the possibility of trade-offs and tensions among the three themes, which helped to expose some of the difficulties and challenges which might be faced in international development in the coming decades. The concept of the 'shaded zone' and the wind-tunnelling aspect of the final scenario helped to crystallise some of the key policy areas, mechanisms and intervention opportunities that might be used by development scholars, policymakers and practitioners to achieve their goals in international development.

During the scenario exercise, some participants expressed a preference to focus on a positive outcome for their topic of personal interest in interaction with negative outcomes for the other two themes, whereas we asked them to take the opposite approach (as illustrated by the shaded/dotted kite in Figure 4, which addressed the interaction of inequality with sustainability and security/inclusion). We could easily have accommodated this preference by reversing the polarity of the three axes within the trilemma. As discussed above, this might have worked particularly well if we had used a tetrahedron, but that would have brought its own problems.

Our use of the trilemma triangle differed from the one adopted by Shell. Whereas their model assumed that there must be a trade-off between three forces that were mutually in tension, it was important for our purposes that we allowed for the possibility of mutual harmony among goals while not neglecting the possibility that they might be antagonistic or in competition with each other.

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